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ABSTRACT

The Instructional Support System for Occupational Education (ISSOE) project, conducted in New York, focused on (1) review of individualized education systems, (2) selection of appropriate occupational clusters, and (3) development and field testing of a system and materials. A product of the Managing Student Progress series of the ISSOE program this booklet provides an overview of the ISSOE system designed to assist occupational education teachers and administrators with implementation and development of a competency-based occupational education program within their school. This user's guide contains four main sections. An overview of the entire ISSOE system is given first, and then the conceptual basis upon which ISSOE was designed, its goals and functions, are explained. This is followed by a description of the system for the management of student progress. Third, information relation to ISSOE dissemination and implementation is offered. Finally, a section on management information is provided, containing information on student and classroom information management, program management, and computer support options. (KC)

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ISSOE

Managing Student Progress

Systems Overview

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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It is important to note that the information contained herein represents ISSOE only as it exists today. Changes are continually occurring, at both the local and state levels, which may alter the information contained in this guide. This guide, however, may be considered a good source of historical information on ISSOE.

James Dunn

James A. Dunn
Institute Director and
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TABLE OF CONTENTS

INTRODUCTION	1
OVERVIEW OF ISSOE	2
Conceptual Basis for System Design	2
System Goals	4
System Functions	5
Curriculum and Instructional Development	6
Management of Student Progress	7
THE MANAGEMENT OF STUDENT PROGRESS	11
Individual Education Plans	11
Student Program Planning	11
IEP Options	13
Record of Achievement /Occupational Preparation Profile	14
DISSEMINATION AND IMPLEMENTATION	17
Statewide Dissemination	17
State Education Department	18
Teacher Training Institutions	18
Local Education Agencies	19
Regional Coordinators	19
MANAGEMENT INFORMATION	21
Student and Classroom Management	22
Program Management	22
Computer Support Options	23
SUMMARY	25

INTRODUCTION

Since its inception in 1975, ISSOE (Instructional Support System for Occupational Education) has steadily evolved from a conceptual plan for curriculum development into a comprehensive system capable of providing instructional support services for teachers and administrators. The system's aim is to improve the effectiveness of occupational education programs. Ideally, ISSOE assists in meeting: the needs of students who are pursuing occupational goals; the needs of employers who are seeking skilled workers; and the needs of educational planners who require information for decision-making purposes.

ISSOE provides teachers with three types of practical support:

First, ISSOE provides a systematic process whereby specific education curricula may be developed to meet local demands for new skilled workers. These curricula help meet individual student needs and are easily business and industry-validated.

Second, ISSOE provides teachers with competency-based performance objectives to support their teaching.

Third, ISSOE provides teachers with a systematic means of assisting their students in determining career goals, planning student programs and attaining student goals. This aspect of ISSOE provides teachers with the technical support needed to permit detailed monitoring of student progress.

This guide begins by providing an overview of the entire ISSOE system, the basis upon which the system was designed, its goals and functions. Next, the system for the management of student progress in a competency-based instruction program is described. After that, a description of the ISSOE dissemination and implementation system is explained. Finally, specific management information, as related to ISSOE, is provided.

The other ISSOE User's Guides, Student Decision-Making, Planning Student Programs, Reporting Student Progress and Developing Student Profiles, provide detailed information to teachers about how to manage student learning.

OVERVIEW OF ISSOE

This section provides an overview of the structure of ISSOE. It begins by explaining the conceptual basis upon which the system is designed. This is followed by a description of the goals which the system is designed to attain, the functions needed to attain these goals, and finally, the systems which were selected to carry out the required functions are explained.

Conceptual Basis for System Design

ISSOE is competency-based. The instructional program can be developed to include occupational skill outcomes using ISSOE. Teachers are aided in the identification of the competencies that will be taught and which will be required for entry into a variety of occupations. Validity is assured by involving employers in the selection and identification of competencies and levels of proficiency. Use of performance terms aids instruction by providing specific information to students about the target behaviors in which they need to demonstrate proficiency. The knowledge that these behaviors are employer-selected skills required for entry-level employment is a motivating factor to students. Students can reflect on their own progress in acquiring the competencies needed for achieving their own specific goals. This system helps take the guesswork out of learning, from the standpoint of the student, since the objective to be performed is made public before instruction begins.

The variety of evaluation aspects of this system can change failure-prone students into productive ones. When students are evaluated by comparison to other students on sometimes vague and irrelevant criteria, the attitudes, as well as performance, of students can deteriorate. When evaluated in terms of their own performance on specific, meaningful criteria, however, a dramatic reversal can occur. This latter method of evaluation, termed criterion-referenced measurement, goes hand-in-hand

with the assumption that all students can achieve proficiency at an acceptable level.

From the standpoint of the instructor, using competency-based instruction with employer-validated criteria means that the course's content will be timely, relevant and well organized. Communication of requirements to students, individualization of learning activities, and evaluation of pupil progress are all facilitated by working from sets of target objectives. Less effort is necessary to justify instructional decisions to students, parents or administrators when those decisions are carefully tied to achievement on which all agree.

ISSOE is a modularized system wherein large curriculum blocks have been broken down into manageable clusters of competencies, or modules. Each module contains tasks, objectives, suggested instructional content and criterion-referenced measures. These modules can then be recombined in various ways to form units and courses. Both flexibility and organization are thus achieved. Also, it becomes easier to chart the employability of a student in terms of competencies successfully demonstrated rather than larger curriculum blocks of more vaguely defined content.

Finally, beyond the classroom perspective, ISSOE was conceived as part of a management system to serve the needs of occupational education on a statewide basis. As such, mechanisms were sought to make ISSOE responsive both to career choices of students and to personnel demands from the world of work. The articulation of these mechanisms with the instructor's daily activities is enhanced because program objectives and student competencies are the same.

System Goals

The major goal of ISSOE is to provide instructional support for occupational education teachers in helping individual students acquire the competencies needed to meet their occupational goals. The subordinate goals of ISSOE are to assist in meeting employer needs by

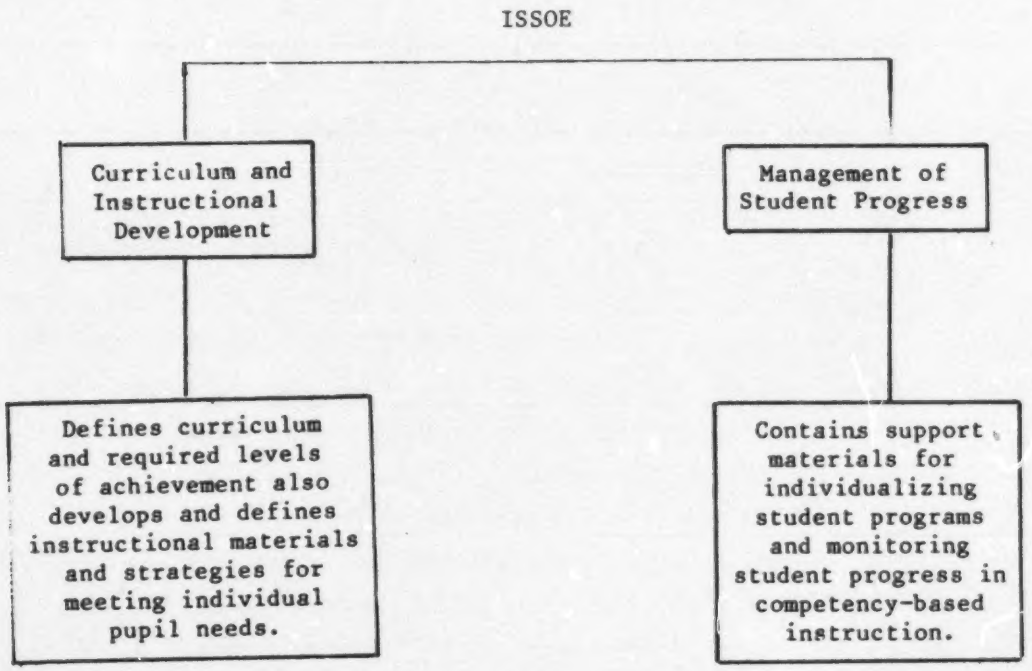
producing students trained for specific occupations, and to provide information to educational program planners for decision-making purposes.

System Functions

The functions of a system are those activities, broad in scope, that must be carried out in order to attain system goals. The functions of the ISSOE system may be grouped into two areas: curriculum and instructional development and the management of student progress. These can be graphically represented and are shown in Figure 1.

FIGURE 1

Two Main Functions of the ISSOE System


ISSOE
Curriculum and Instructional Development
Management of Student Progress
Defines curriculum and required levels of achievement also develops and defines instructional materials and strategies for meeting individual pupil needs.
Contains support materials for individualizing student programs and monitoring student progress in competency-based instruction.

Curriculum and Instructional Development. This refers to defining curricula in terms of the educational outcomes to be attained by the students. It includes the specification of required levels of achievement, attitudes and job-related performance.

Occupational programs are intended to meet demands for skilled workers; they give first priority, however, to areas of need common to all students in similar programs across the state. Special and unique local and regional needs are included in addition to those common statewide. Therefore, if schools are to respond to changing demands, they must continually reassess the goals of their programs. After these program goals are established, it is necessary to define specific program objectives. Following this, specific competencies, to be learned by students in order to qualify them for targeted occupations, must be identified.

The end result of the curriculum development portion of this function is a file of employer-validated tasks. Groups of tasks organized into modules constitute the curriculum for the occupational training programs.

Teams of teachers in each occupational education planning region develop curriculum modules for the statewide programs. They also respond to regional and local occupational needs. These modules identify the competencies students are required to learn in order to qualify for a particular job. Therefore, the competencies included in each module are linked to Dictionary of Occupational Titles (D.O.T.) job descriptions to facilitate the selection of those competencies that are relevant to students' occupational goals. This clustering of competencies by D.O.T. job descriptions is validated by employers to insure that the relationship of competencies to job titles is authenticated by an authoritative source. Thus, the resulting product is a file which includes ISSOE modules containing those competencies that must be learned by students if they are to attain entry-level employability.

The agency responsible for the sponsoring and monitoring of curriculum development is the Bureau of Occupational Education Program Development in the Division of Occupational Education Instruction of the New York State Education Department. The Bureau interacts with ISSOE Regional Coordinators, who coordinate ISSOE activities within their respective regions, and ISSOE Area Facilitators who are responsible for training and supervising in the process of curriculum development. The ISSOE Area Facilitators are located at the State University College at Buffalo, the SUNY College of Technology at Utica-Rome, and the New York Institute of Technology, Old Westbury, Long Island.

The instructional development part of this function provides services which assist teachers in producing new instructional strategies and materials for meeting the needs of students. The use of ISSOE instructional modules may require that some teachers learn new techniques and strategies. These may involve learning more about individualized instruction, how to deal with slow and fast learners, how to assess student progress through criterion-referenced testing, etc. The organization and use of this system is monitored by each instructional bureau and the Division of Occupational Education Instruction of the New York State Education Department.

Teachers receive support from SED and the Area Facilitators in identifying instructional materials and/or preparing new materials. They also receive assistance in identifying and implementing new instructional strategies, in identifying unique pupil learning styles, and in conversion to competency-based occupational education.

Management of Student Progress. This function provides teachers with the means to help students select their occupational goal(s), plan an appropriate program, and monitor student progress toward their occupational goal(s). The management of this student progress has two major components: the Individual Guidance and Planning System (IG&P) and the Reporting System (RS).

The purpose of the IG&P is to provide guidance to students in selecting their occupational goals and to teachers in planning pupil programs. The RS provides information needed by students, teachers, employers and others who have an interest in the progress of students toward specific kinds of employment.

IG&P makes available student-oriented planning activities that are needed so that the students may make informed career decisions. IG&P is a planning function which involves the teacher in a central role; by using ISSOE performance objective files the teacher interacts will all interested parties to assist the students in selection of an occupational goal. Having at their disposal the specific competencies that students are required to learn in order to enter into and progress through their chosen occupation, teachers are able to clarify, and put into perspective for the students, what learning will be required. Some students, of course, enter occupational education programs with vague or unrealistic ideas about the goals they wish to attain. If this becomes obvious in the planning stage, the teacher may wish to suggest alternative or supplementary goals. The positive approach, acting on the assumption that students can attain their goals, maintains maximum student interest and motivation.

Thus, the product of Individual Guidance and Planning is an Individual Education Plan (I.E.P.) which the teacher uses to guide the student through the program.

As the student pursues a program of study, the progress of the student toward the selected goals and competencies needs to be monitored. This need is satisfied by the Reporting System (RS). RS is designed to provide interim and end-of-program information regarding student progress in competency-based occupational education programs. The reporting forms provide a display of this progress for students, teachers, parents, guidance counselors, employers and administrators. The interim reports provide the teacher and students with information to review individual progress toward occupational goals.

This section of this ISSOE User's Guide has explained the conceptual basis upon which the ISSOE system was designed, the system's goals and functions. The purpose of this section is to detail the major pieces which contribute to ISSOE. The next section will briefly explain how student learning is managed in ISSOE.

THE MANAGEMENT OF STUDENT PROGRESS

This section describes briefly the individual components of the Management of Student Progress system of ISSOE. The design of the components is characterized by a high degree of flexibility to accommodate the diversity of local agency priorities, organizational structures and administrative practices.

Individual Education Plans

The two principal activities required for the development of Individual Education Plans (IEPs) are (1) the preparation and conducting of student program planning conferences and (2) the development of the actual IEP. Following is a description of each activity with its rationale.

Student Program Planning

Program planning involves (1) the preparation of formal planning notices which are sent to the parents informing them of the planning conference and (2) the conducting of the actual conference. The date of the planning session should be coordinated to permit the best possible representation of those individuals thought to be critical to effective planning.

Planning for students identified as "handicapped" must meet state and federal regulations, which specify those who must be involved. Local policy, however, will determine which of the following persons should be included in planning for other students.

- the student
- the parent(s) of the student
- the administrator(s)
- guidance counselor(s)
- consultant(s)
- other specialists

Some New York schools have set a goal of developing formal, individualized education plans for every student enrolled in an occupational program. Class enrollments of 40 to 60 students per teacher may, of necessity, limit the number of persons that may be involved in individual student planning.

With respect to the planning conferences themselves, a prerequisite is the accumulation of some knowledge about the student. Literature reviews have revealed that important information is available directly from the student; this information may be tapped with instruments at various levels of sophistication (see ISSOE User's Guide titled Student Decision-Making.

If an individual plan is to be prepared, the teacher must at least (1) assist the student in selecting an occupational goal or goals; and (2) assist the student in determining how realistic the goal or goals may be.

Theoretically, a student may, after some career exploration, discriminate among the job titles for which a selected occupational training program is likely to prepare the student. The validity of this choice may be questioned (and probably should be); but the right of a student to participate in the selection of educational goals is undeniable. If an unattainable goal is selected, the educator has a responsibility to counsel the student or to obtain professional counseling service as required and available. However, it is still incumbent upon the teacher to assist the student in reaching the goal.

IEP Options

To the extent that the student has been able to make a reasoned, approriate goal choice, an Individual Education Plan (I.E.P.) can be developed to specify how the student is to achieve that goal. An IEP is a list of student objectives, and, if required, the auxilliary services which will focus student learning activities for a specified length of time. There are a number of options available in developing an Individual Educational Plan. These are discussed below:

1. IEP by D.O.T. Follow-up studies reveal that large numbers of students completing occupational programs are employed in a limited number of job categories. Thus, the ISSOE curriculum objectives pertinent to a given D.O.T. job (or job cluster) can be specified in advance through task analysis of specific jobs. Teacher and students are, therefore, able to exercise choices among those jobs which represent realistic job opportunities. Accordingly, IEP generation may be done through interpretation of the results yielded by task analysis and verification. This option has been fairly well developed and has the additional advantage of feeding directly into the system for reporting student progress.
2. IEP by Competency Clusters. A second alternative in developing IEPs is to allow the student to select from a fairly wide range of possible job titles or clusters within a given program or related programs. Assuming a job is selected for which a relatively well written and comprehensive position description is available, it is possible to conduct a task analysis based on the position description which identifies the relevant major competencies. These competencies are translated into curriculum objectives for the student. The list of objectives, in essence, becomes the IEP.

The ISSOE User's Guide, "Planning Student Programs," provides some instruction for the completion of this phase. Persons interested in more specific information regarding the IEP should consult that guide.

3. IEP Open Format. A teacher may generate an IEP for every student in their course if sufficient training and resources are provided. The literature review found several examples where teachers had been trained to use manuals and guides to generate the total plan. This option often incorporates computer program capabilities to develop IEPs. Our observations of administrators and curriculum developers suggest it is probably unreasonable to expect teachers to generate the total IEP without extensive training and materials development. Both teacher training and materials development are extremely expensive and time-consuming activities. An extensive long-term commitment would probably be needed if this option is seriously considered.

Record of Achievement/Occupational Preparation Profile

The Record of Achievement/Occupational Preparation Profile (RAOPP) provides information to teachers, students and employers and others on student progress toward occupational goals by utilizing data on the attainment of instructional objectives. At the same time, it delivers information to occupational education managers for decision-making purposes related to program planning and improvement.

A RAOPP is a competency-based reporting system. It provides feedback on the attainment of major competencies which were learned. Competencies identified in these analyses are grouped into meaningful clusters and stated in terms of student performance. The flexibility to update and revise these competencies periodically is built into the system. This procedure accomplishes two things: it ensures that competencies being measured are still important in the work place, and it introduces new competencies for teaching when they become important to employers. This ensures the relevancy of the curriculum to the world of work and thus contributes towards more efficient teaching and more effective programs.

A RAOPP can be characterized in terms of three distinct activities:

(1) Reporting of student progress data.

(2) Generating interim student record of achievement profiles.

(3) Generating end-of-program record of achievement profiles.

Step-by-step instructions for the use of the Record of Achievement, as well as examples, are given in User's Guides titled Reporting Student Progress and "Developing Student Profiles."

This section briefly described the techniques which are used to manage student learning in the ISSOE system. As was mentioned in the section, more specific and detailed information regarding the management of student learning can be found in the other ISSOE User's Guides.

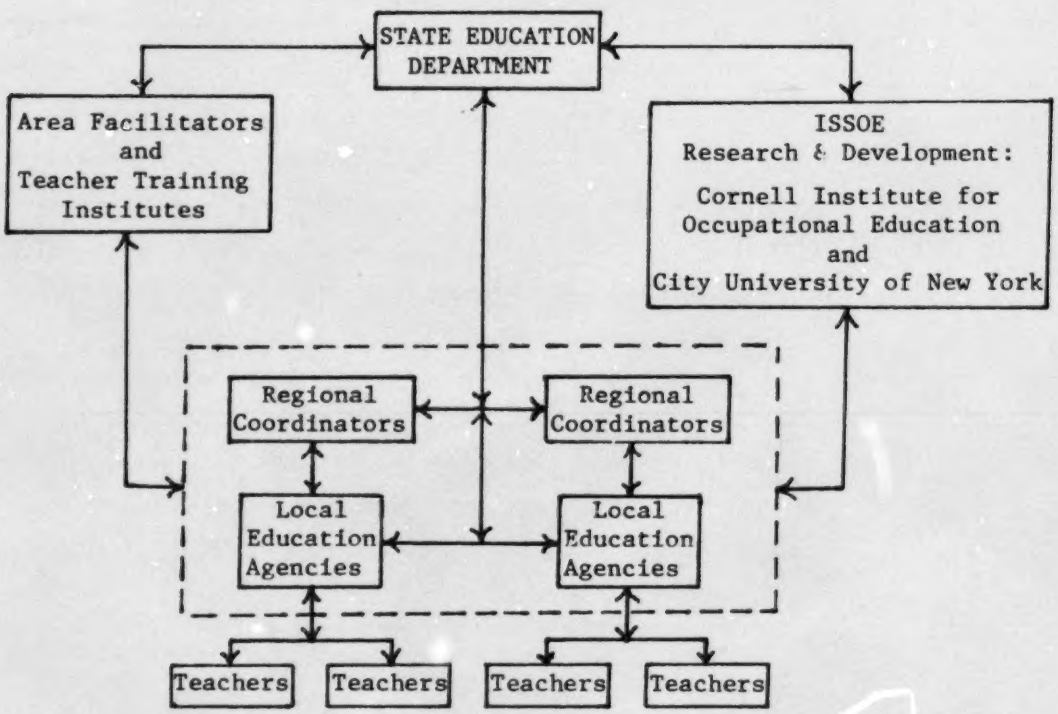
DISSEMINATION AND IMPLEMENTATION

Statewide Dissemination

The major organizational components of the ISSOE dissemination System are already in operation statewide. Figure 2 is an organizational chart showing the relationships among the State Education Department, Area Facilitators at the teacher training institutions, local educational agencies, Regional Coordinators and teachers.

FIGURE 2

ISSOE Organization Chart for Dissemination and Evaluation



The following notes specify each organizational unit and identify its main functions.

State Education Department

Division of Occupational Education Instruction

Bureau of Occupational Education Program Development

Function: Sets policy for curriculum development and sponsors futuring and curriculum development procedures.

Teacher Training Institutions

State University College at Buffalo

SUNY College of Technology at Utica-Rome

New York Institute of Technology

Function: Area Facilitators, located at each institution, perform these functions:

1. Act as facilitator for the curriculum process.
   a. Verification of major objective criteria relating to task performance.
   b. Verification of modules to D.O.T. code.
   c. Collect and review responses from Regional Coordinators.
   d. Transmit items for action by other regions to the respective Regional Coordinators.
   e. Resolve differences to obtain consensus.
   f. Edit, print and disseminate curriculum output in concert with SED.
2. Provide inservice education to LEAs.

Local Education Agencies

Teachers participate on the basis of SED selection

Function: Teachers located at each school serve to:

1. Field test curriculum within guidelines
   a. Test modules in local educational setting.
   b. Critique modules tested.
   c. Collectively act upon recommendations from other regions.
   d. Involve local trade or Advisory Committee.
   e. Continue inputs for updating.
2. Receive inservice education through Regional Coordinators.

Regional Coordinators

Thirteen Occupational Education Planning Regions.

Function:

1. Coordination of curriculum development process by interfacing with Area Facilitators, Bureau of Occupational Education Program Development, and R&D Units.
   a. Discuss distribution and assignment of modules to teachers to develop, test and critique.
   b. Arrange for teacher groups to develop materials in accordance w/guidelines established in the futuring process and act upon individual teacher critiques.
   c. Assemble critique responses.
   d. Transmit recommendations to Area Facilitators.
   e. Review information sent from Area Facilitators and/or Bureau of Occupational Education Program Development.
   f. Respond to requests from Area Facilitators and/or Bureau of Occupational Education Program Development.
2. Coordination of inservice needs of teachers through Area Facilitators.

MANAGEMENT INFORMATION

In addition to providing a comprehensive system for instructional support, ISSOE components have been designed to operate with a statewide Management Information System (MIS) which is currently under development. The State Education Department is committed to ISSOE as a sub-system of this MIS, because ISSOE specified the outcomes of occupational education in a way that is compatible with the requirements of an information system. Specifically, ISSOE articulates with the Occupational Education Reporting System (OERS). OERS functions to collect enrollment and follow-up data and manipulates that data for program planning purposes. The sharing of a common student data base by these two systems has the potential advantage of reducing the collection and storage of duplicate data. As an example, enrollment data, such as students' names, coded by program area and collected in OERS would not have to be requested of the teacher who is reporting to the ISSOE system. Instead, the OERS has the potential to generate a profile containing students' names properly coded for ISSOE teachers. ISSOE teachers would then simply add "new" data but would not duplicate data.

In addition to linking ISSOE data collection to the OERS data base, the ISSOE student competencies can also be linked to other systems such as the D.O.T. Job Title Code System. This latter connection of instructional outcomes with occupational classification data could eventually link the OERS and the ISSOE on one hand and an occupational targeting or labor analysis system on the other. (This labor analysis system remains to be specified.) This linkage could improve the effectiveness of occupational programs because teachers would be better equipped to counsel students towards occupations that demand the greatest numbers of workers. This latter point illustrates the use of the term "management information" and the decision-making support function of an MIS.

In essence, an MIS is designed to provide management with useful information sufficiently early to make decisions in an effort to improve the effectiveness of a program or of an organization. Therefore, if teachers are considered as classroom managers and administrators as school or program managers, it can be seen that the ISSOE can provide management information at both the classroom and administration levels simultaneously.

Student and Classroom Management

The information reports described in the previous section are in effect management information for teachers. Such information permits teachers to assist students in informed decision-making and choosing careers. It enables both teachers and students to reevaluate the choices on the basis of systematic reports of student progress; and to make informed decisions as to whether corrective action is necessary. It also permits teachers to make curricular decisions relative to the progress of their class as a whole. This information may imply curricular changes or changes in instructional strategies.

Program Management

Individual student reports by teachers can be aggregated to provide information for program planning and evaluation purposes. This RS is competency-based in that it generates information concerned with skills grouped into job clusters. Such groupings reflect the supply of skilled workers, information which is essential to the planners. Student reports provide planners and administrators with a device for "fine-tuning" ISSOE to deal with changes in patterns of competencies demanded by employers. With such information, the supply of skilled workers, as well as the competencies they learn, can be matched with labor demands to produce more effective occupational education.

Computer Support Options

Recognizing that all LEAs differ in their procedures for keeping records and managing data because of their size or policies, the management system is amenable to various data management options. It is up to the LEA to develop which method best suits its needs and interests.

The manipulation of all data to provide all of the information reports previously described can be managed manually, by computer, or by word processing equipment. The system does not mandate the use of a computer. The system is designed so that segments can be operated manually or with local mini-computer support or with regional computer assistance to provide student and/or program management information for local use. Regional computers could also aggregate reports for local useage and to assist local agencies in meeting their state and federal reporting mandates, however.

SUMMARY

This User's Guide to ISSOE contains four main sections. An overview of the entire ISSOE system, the conceptual basis upon which ISSOE was designed, its goals and functions were first explained. This was followed by a description of the system for the management of student progress. Third, information related to ISSOE dissemination and implementation was offered. This was followed by a section on management information.

All ISSOE User's Guides are designed to assist occupational education teachers and administrators with implementation and development of a competency-based occupational education program within their school.

Should you have any questions about this system for Managing Student Progress or any of the User's Guides in this system, please do not hesitate to contact either your Regional Coordinator, Area Facilitator, or the Cornell Institute for Occupational Education (607-256-6515).